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ABSTRACT

A new model of public school district performance concerns the "employment relations" (ER) system within a school district--the policies, practices, and actions that govern relations between a district and its teachers. The model posits that the performance of public school districts is propelled by the quality of ER. Productive ER, indicated by low levels of administrator-teacher conflict and positive work attitudes held by teachers, has been posited to facilitate high levels of school district performance. Archival data on 180 public school districts in Pennsylvania, combined with survey data from 10,308 teachers from these districts, were used to test the model. Results show that productive ER in school districts is positively associated with the test pass rate and negatively associated with the dropout rate. These findings result after controlling for student socioeconomic status, per-student instructional expenditures, and the adequacy of school facilities. The study has managerial implications for school administrators because it focuses attention on the degree to which administrators effectively manage ER within schools. In conjunction with reform programs focusing on curricula and school funding, training administrators to manage ER could be a relatively inexpensive component of an overall scheme for improving public education. (Contains 59 references.) (YLB)

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A New Approach to Research on Public School District Performance: The "Employment Relations" Model

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by Steven Currall

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Abstract

This paper presents a new model of public school district performance. The model concerns the "employment relations" (ER) system within a school district—the policies, practices, and actions that govern relations between a district and its teachers. The model posits that the performance of public school districts, measured as the student pass rate on a standardized test of academic competence and the student dropout rate, is propelled by the quality of ER. Productive ER, indicated by low levels of administrator-teacher conflict and positive work attitudes held by teachers, was posited to facilitate high levels of school district performance.

Archival data on 180 public school districts in Pennsylvania, combined with survey data from a total of 10,308 teachers from these districts, were used to test the model. Results show that productive ER in school districts is positively associated with the test pass rate and negatively associated with the dropout rate. These findings were obtained after controlling for student socio-economic status, per-student instructional expenditures, and the adequacy of school facilities. Implications for education reform and how administrators should manage ER to enhance school district performance are discussed.

Introduction

In recent years, many American companies have responded to sharply rising international and domestic competition by adopting innovative workplace arrangements such as self-managing work teams, total quality management, and computer-aided design and manufacturing (CAD-CAM). These arrangements require a workforce with strong mathematical, technical, and communication skills (Carnevale and Carnevale 1993). Because the development of a highly skilled workforce is important, America's K-12 schools must prepare young people for today's innovative workplace arrangements.

However, despite the demand for highly skilled workers, there is evidence that America's public schools are not adequately preparing our youth for the modern workplace. Reports such as *A Nation at Risk* (National Commission on Excellence in Education 1983) and *A Nation Prepared* (Carnegie Forum on Education and the Economy 1986) have convinced policy makers, educators, and industrial leaders that improvements in the quality of education are mandatory if American industrial competitiveness is to be assured. The 1991 report of the Secretary of Labor's Commission on Achieving Necessary Skills (SCANS) found that many American young people lack the basic skills required to succeed in the workplace. Such educational deficiencies pose serious economic ramifications for the U.S. because it is difficult to achieve a high-wage economy without a highly skilled workforce. Improving America's public education system is critical to enhancing the skill level of its workers.

Currently, the public policy question is not whether America's public schools need to be reformed. Rather, the debate centers upon what types of reforms should be carried out. Effective reform policies, however, cannot be formulated unless the determinants of public school performance are well understood.

My purpose is to proffer a new approach to studying the determinants of public school district performance. This approach, the "employment relations" (ER) model, posits that the performance of a school district is strongly influenced by the district's ER system—the

policies, practices, and actions that govern relations between a district and its teachers.

This paper explicates the initial development and testing of the ER model. It begins with a discussion of the theoretical foundation for the model, followed by an explanation of data used to test the model. I then present results that demonstrate that districts with productive ER had significantly higher student pass rates on a standardized test of academic competency and significantly lower student dropout rates. At the end of the paper I seek to broaden the scope of public policy debates about education reform by suggesting that school performance can be enhanced, not only by improving instructional techniques (the emphasis of curriculum reform programs), or by increasing the financial resources schools have at their disposal (the emphasis of school funding reform programs), but also by improving the effectiveness with which administrators manage ER with teachers. The following section locates the ER model in the context of the existing literature and explains how the ER model differs from previous paradigms in research on school performance.

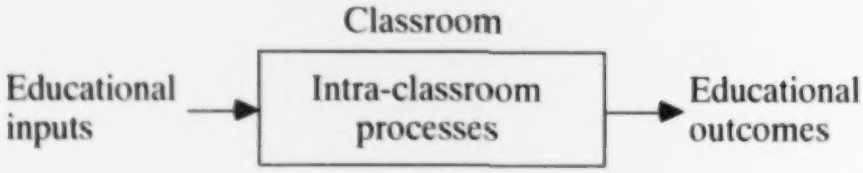
Dominant Paradigms in Research on School Performance

The majority of research on school performance has concentrated on the instructional efficacy of the student-teacher interface. As discussed by Brophy (1986), Edmonds (1983), Good and Weinstein (1986), Purkey and Smith (1983), and Rutter (1983), determinants of instructional efficacy are: teaching techniques, school facilities, teacher behaviors, teacher development, and support staff. A second paradigm has been put forward by economists. This body of work has used the "production function" idea to investigate the determinants of school performance. In this vein, economists and other researchers such as Bowles (1970), Glasman and Biniaminov (1981), Hanushek (1986), Hanushek and others (1994), Hedges, Laine, and Greenwald (1994), Levin (1970), Murnane (1981a, 1981b), and Summers and Wolfe (1977) studied the combination of educational inputs, such as instructional expenditures, teacher salary, and teacher education, that produce educational outputs such as student performance on standardized tests. Figure 1 depicts the education and economic paradigms that have historically dominated research on school performance and contrasts them with the ER model.

These educational and economic paradigms have yielded a wealth of research literature on determinants of school performance. Excellent work has been done in both areas. Yet, these paradigms have been limited by the research questions stemming from their respective theoretical viewpoints. They have neglected some important research questions concerning the functioning of school districts as organizations (Bidwell and Kasarda 1975), such as the role of a school district's intra-organizational ER system (Currall, Brandon, Jacobs, Wazeter, and Krishnan 1994). Given a wealth of research findings from the fields of human resource management and labor relations indicating that the quality of ER impacts organizational performance, it is surprising that school researchers have not investigated the effect of ER on school performance.

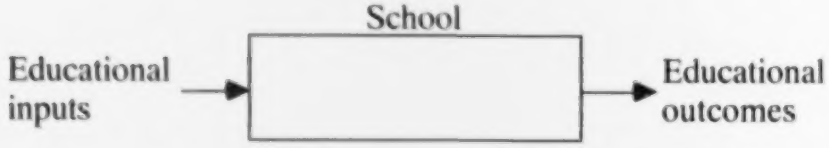
Figure 1
School Performance: Three Paradigms

1. Education



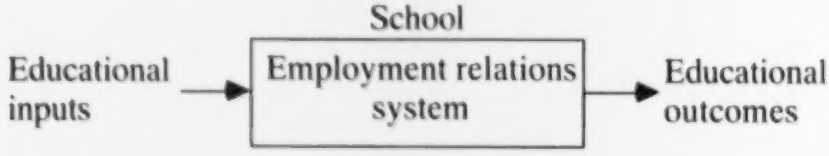
Educational inputs that determine educational outcomes:
(1) instructional techniques, (2) facilities, (3) teacher behaviors, and (4) teacher experience.

2. Economics



Educational inputs that determine educational outcomes: (1) school finance (e.g., instructional expenditures) and (2) teacher salary.

3. Employment Relations



Educational inputs that determine educational outcomes: (1) administrator-teacher conflict, (2) teacher involvement in school-based governance structures, (3) teacher job satisfaction, and (4) teacher turnover.

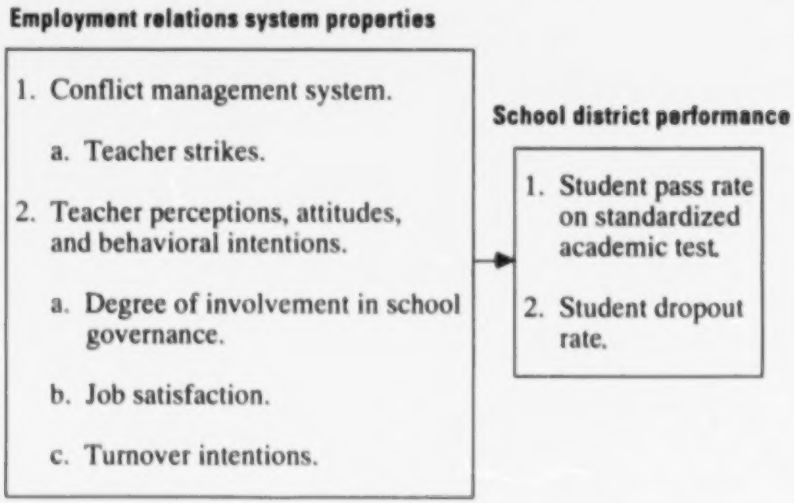
The Employment Relations Model

The theoretical foundation for the ER model comes from the latest research on how human resource management and labor relations practices affect organizational performance (Appelbaum and Batt 1993; Bailey 1992; Cappelli and Singh 1992; Ichniowski, Shaw, and Prennushi 1994; Katz and Keefe 1992; Katz, Kochan, and Gobeille 1983; Katz, Kochan, and Weber 1985; Levine and Tyson 1990; McDuffie 1995; Pfeffer 1994). The theoretical logic of this research is defined in the following way. Managers adopt ER practices concerning employee hiring, training, job assignments, evaluation, compensation, promotion, and collective bargaining. These practices form the ER "system" that governs the quality of relations between employees and their organization (Dunlop 1993). Indicators of productive ER are the effective management of conflict by managers and employees, the extent of employee involvement in organizational decisions, and the degree to which employees have positive work-related attitudes such as high job satisfaction and strong organizational commitment (Bailey 1992). Evidence supporting the impact of productive ER on organizational performance in the auto industry was obtained by Katz and his colleagues (Katz et al. 1983; Katz et al. 1985), who showed that multiple indicators of ER quality were associated with organizational performance. Further evidence supporting the ER-organizational performance linkage in the steel and auto industries was provided by Ichniowski et al. (1994) and McDuffie (1995), respectively. The effect of productive ER on organizational performance is attributed to enhanced employee job performance stemming from productive ER practices. Decades of research findings have indicated that productive ER yields high levels of employee job performance (Cascio 1992).

Main Components of the Model

In a generic framework concerning ER and organizational performance, Katz et al. (1985) proposed two essential, yet not exhaustive, indicators of the quality of an organization's ER system: (1) the system through which management and employees manage their

Figure 2
Employment Relations and School District Performance


Employment relations system properties
1. Conflict management system.
a. Teacher strikes.
2. Teacher perceptions, attitudes, and behavioral intentions.
a. Degree of involvement in school governance.
b. Job satisfaction.
c. Turnover intentions.
School district performance
1. Student pass rate on standardized academic test.
2. Student dropout rate.

conflict; and (2) employee perceptions, attitudes, and behavioral intentions. Applying this framework to public school districts, two indicators of the quality of a district's ER are: (1) administrator-teacher conflict management; and (2) teacher perceptions, attitudes, and behavioral intentions. The importance of teachers to school district performance is central to the ER model—although "secondary" resources (such as school facilities) influence school performance, teacher job performance is the "primary" resource affecting school performance (Hanushek and others 1994; Murnane 1981a). Moreover, work-related perceptions, attitudes, and behavioral intentions are important determinants of teacher job performance (Glasman and Biniaminov 1981). With respect to the ER model's outcome measures, the performance of a school district was conceptualized as a two-dimensional construct in terms of "cognitive" and "noncognitive" (Glasman and Biniaminov 1981) performance indicators: the average pass rate of a district's students on a standardized academic competency test and the percentage of a district's students who dropped out of school. The ER model is summarized in Figure 2.

Contributions of the ER Model

By positing relationships not explored in previous research, the ER model makes two unique contributions. First, although previous research has studied the nature of administrator-teacher relations (Johnson 1983; Shedd and Bacharach 1991), the ER model posits that it is the quality of administrator-teacher relations that affects school district performance (see also Currall 1992a; Currall 1992b; Currall and Judge, in press). Second, Bowles (1970) and Glasman and Biniaminov (1981) called for research on teacher work-related attitudes. The ER model posits and tests

hypotheses about a central teacher attitude—job satisfaction. The model goes further by positing and testing additional hypotheses about teacher work-related perceptions and behavioral intentions.

Hypothesized Relationships

Because conflicts between administrators and teachers are inevitable, the ER system must provide mechanisms for addressing conflicts. Thus, the model's first indicator of ER quality is the degree to which administrators and teachers effectively manage their conflict. Poor conflict management is indicative of unproductive ER. Failed conflict management is associated with decreased organizational performance (Katz et al. 1985), because the "aftermaths" of this failure are a sour climate in administrator-teacher relations, distrust, hostility, delays, deadlocks, and inefficiencies in decision making (Thomas 1976).

The present study examines unionized school districts with collective bargaining as the primary mechanism for administrator-teacher conflict management. Because a teacher strike is a "joint product" of both administrators and teachers—a strike is often as much a function of intransigence by administrators as it is a function of militancy by teachers—a teacher strike was used as an indicator of failed conflict management. Therefore:

Hypothesis 1a. Teacher strikes will be negatively related to student pass rates on a standardized test of academic competency.

Hypothesis 1b. Teacher strikes will be positively related to student dropout rates.

The second indicator of ER quality is the category of work-related perceptions, attitudes, and behavioral intentions of teachers. School districts that have productive ER between administrators and teachers will be characterized by active teacher involvement, high teacher job satisfaction, and teachers who intend to maintain their employment in public education. Districts with unproductive ER will be characterized by little teacher involvement in decision making, low teacher job satisfaction, and teachers who intend to seek employment elsewhere. Hypotheses regarding the impact of teacher involvement, job satisfaction, and turnover intentions on school district performance are based upon an application of research findings showing that: (1) employee involvement is associated with enhanced organizational performance, because employees' knowledge contributes to improved organizational decision making and enhanced employee commitment to implementing decisions (Levine and Tyson 1990; Wagner 1994); (2) job satisfaction is associated with enhanced organizational performance because satisfaction leads to multiple performance-related behaviors such as increased work effort and reduced absenteeism (Organ 1988; Ostroff 1992; Roznowski and Hulin 1992); and (3) turnover intentions are associated with decreased organizational performance because they are symptomatic of psychological withdrawal from the job and its resultant performance decrements from lateness, avoidance of work, and low job effort (Hanisch and Hulin 1990; Ostroff 1992). Therefore:

Hypothesis 2a. Teacher involvement in decision making will be positively related to student pass rates on a standardized test of academic competency.

Hypothesis 2b. Teacher involvement in decision making will be negatively related to student dropout rates.

Hypothesis 3a. Teacher job satisfaction will be positively related to student pass rates on a standardized test of academic competency.

Hypothesis 3b. Teacher job satisfaction will be negatively related to student dropout rates.

Hypothesis 4a. Teacher turnover intentions will be negatively related to student pass rates on a standardized test of academic competency.

Hypothesis 4b. Teacher turnover intentions will be positively related to student dropout rates.

In addition to the ER model, I included two exploratory measures of ER quality, namely, teacher perceptions of the adequacy of programs for teacher performance evaluation and professional development. Districts with productive ER will be characterized by better performance evaluation and professional development programs relative to districts with unproductive ER. If the caliber of these programs is found to be associated with district performance, this would suggest that one way to enhance school district performance would be to train school administrators to emphasize the effectiveness of these programs. As the basis for these hypotheses, I used previous research that demonstrates linkages between effective performance evaluation and organizational performance due to the clarification of employee goals and delivery of diagnostic feedback that facilitates improved job performance (Landy and Farr 1983). Also, past research has indicated that organizational performance is affected by employee development (training) (Carnevale and Goldstein 1990) because of improved employee job knowledge, leadership skills, the ability to use new technology, and reductions in performance errors (Burke and Day 1986). Because of their exploratory nature, tests of Hypotheses 5 and 6 will be conducted separately from tests of the basic ER model:

Hypothesis 5a. The adequacy of teacher performance evaluation will be positively related to student pass rates on a standardized test of academic competency.

Hypothesis 5b. The adequacy of teacher performance evaluation will be negatively related to student dropout rates.

Hypothesis 6a. The adequacy of teacher professional development will be positively related to student pass rates on a standardized test of academic competency.

Hypothesis 6b. The adequacy of teacher professional development will be negatively related to student dropout rates.

Testing the ER Model: Measurement and Data Analysis Issues

The variables used to test the ER model have desirable measurement properties. For example, the standardized test of student academic competency used for this analysis contains no self-selection bias—it was administered to all third, fifth, and eighth grade students in each district. The absence of self-selection bias in this test contrasts with substantial self-selection bias inherent in common achievement tests, such as the Scholastic Aptitude Test (SAT), which are often used as educational outcome measures. The SAT suffers from self-selection bias because it is only taken by college-

bound high school students (Hanushek and Taylor 1990). Second, the survey measures of teacher perceptions, attitudes, and behavioral intentions are based upon extensive scale development by Hofmann, Mathieu, and Jacobs (1990). On the basis of confirmatory factor analyses (LISREL) using separate samples of 3,724 and 3,037 Pennsylvania public school teachers, Hofmann et al. (1990) show that the survey items significantly load on their hypothesized factors, the number of factors are the same across samples, and the items load on the same factors across the two samples. Third, because the present study uses aggregated teacher survey responses as within-district measures of teacher perceptions, attitudes, and behavioral intentions, evidence of homogeneity of survey responses within school districts is required (Ostroff 1992). I used two intraclass correlations to test quantitatively whether within-district homogeneity warranted aggregation at the district level. Intraclass correlations, presented later, provide justification for aggregation.

In all tests of the ER model, I controlled for three school district characteristics that explain performance heterogeneity across districts (Glasman and Biniaminov 1981): (1) student background characteristics, in the form of student socio-economic status (SES) (Coleman and others 1966); (2) district financial resources, in the form of instructional expenditures per student (Hedges et al. 1994); and (3) the adequacy of school physical facilities (Summers and Wolfe 1977). These were important controls because districts that have the advantage of high SES students, high per-pupil expenditures, and excellent physical facilities are likely to exhibit higher performance compared to less advantaged districts.

Two additional points regarding tests of the ER model are necessary. First, although the present study uses the school district as the unit of analysis, this is not the only possible unit of analysis for research on ER in educational organizations. I used the school district as the unit of analysis because the vast majority of policies, practices, and actions that govern ER are formulated and implemented at the school district level and because district-level data were readily available. However, ER also may be affected by factors operating at the school level, such as the principal-teacher relationship (Johnson 1983). Future researchers may want to examine indicators of ER quality that operate at the school level. Second, empirical tests of the ER model carried out in the present study should be considered to be preliminary because my data do not exhaust all possible indicators of ER quality. Data were unavailable to measure other indicators of ER quality, such as teacher organizational commitment. Moreover, previous empirical work conducted in other organizational contexts, such as Katz and Keefe (1992), measured ER quality by using archival data on the presence or absence of ER practices in organizations (such as the presence of a compensation policy like pay-for-performance). For the present study, data on ER practices themselves were unavailable.

Method

Data

Data were obtained on 180 public school districts in Pennsylvania. Within these 180 districts, data were available from 63 districts for the academic year 1987-1988, 52 districts for 1988-1989, and 65 districts for 1989-1990. Data were cross-sectional; no district contributed data from more than one year. Districts ranged in size from 420 to 12,451 students (M = 3,091; SD = 2,117). Although modest, a sample size of 180 is similar to the sample of 175 observations in the Katz et al. (1985) study of ER and organizational performance.

Archival information from the Pennsylvania Department of Education provided data on the two measures of district performance—the average pass rate of a district's students on an academic competency test and the percentage of a district's students who dropped out of school. Archival data also provided measures of student socio-economic status, of instructional expenditures per student, and of teacher strikes.

Survey measures of teacher perceptions, attitudes, and behavioral intentions were obtained from annual surveys administered within districts. Surveys were administered by the Pennsylvania State Education Association (PSEA) as part of a larger study of educational professionals. A PSEA representative (such as the local union president) in each district distributed the surveys. Surveys were administered to all teachers and educational professionals in the school district (regular classroom teachers, special education teachers, vocational/technical teachers, guidance counselors, psychologists, nurses, librarians, therapists, and dental hygienists).

In tests of the ER model using a standardized test pass rate as the school district performance measure, I used survey responses from elementary and junior high school classroom teachers; senior high school teachers were excluded. Because the standardized test was administered to third-, fifth-, and eighth-grade students, inclusion of survey responses from elementary and junior high school teachers allowed me to capture the impact of both "proximate" (current) and "previous" teachers (Monk and King 1994) on student test scores. Alternatively, in tests of the ER model using

dropout rate as the district performance measure, I used a different set of survey respondents. Because a student's decision to dropout could be influenced by a variety of educational professionals, I used survey responses from classroom teachers, vocational/technical teachers, guidance counselors, and psychologists. Within this sample, 86.3 percent were classroom teachers, 9.1 percent were vocational/technical teachers, 4.5 percent were guidance counselors, and 0.1 percent were psychologists. Survey responses from educational professionals who worked in elementary school settings were excluded because they were believed to have a negligible impact on a student's decision to drop out in junior or senior high school. Table 1 provides a summary of the survey respondents. Also shown in Table 1 are the sample representativeness figures.

Table 1
Summary of Survey Respondents

	Respondents Used in Tests of ER Model	
	Tests of ER model using standardized test pass rate as the school district performance measure	**Tests of ER model using dropout rate as the school district performance measure**
Types of respondents	1. Classroom teachers (Elementary and junior high school levels only)	1. Classroom teachers 2. Vocational/technical teachers 3. Guidance counselors 4. Psychologists (Junior and senior high school levels only)
Number of respondents per school district	Average: 57 Range: 10 to 331	Average: 45 Range: 5 to 215
Response rate per school district (returned surveys divided by possible survey respondents)	Average: 60.2% Range: 22% to 100%	Average: 60.1% Range: 22% to 100%
Respondent demographics	Average age: 41 Sex: 73% female, 27% male	Average age: 42 Sex: 46% female, 54% male
Total respondents	10,308	8,081

Note: N=180 school districts.

Measures

School District Performance. The Pennsylvania Department of Education annually administered the Test of Essential Learning and Literacy Skills—which I labeled TEST—to all third, fifth, and eight grade public school students. The test was administered annually beginning in the 1983-1984 academic year; the last administration was in 1990-1991. In a given year, the test, which was a standardized criterion-referenced test of basic reading and math competency, was administered to approximately 400,000 students. A passing score on the test depended on the grade level, but ranged from 66 to 71 percent correct answers, which is approximately 15 percentage points below the national average for these test items (Pennsylvania Department of Education 1987). To create a measure of the academic competency of each district's students, I computed a district's mean score of six pass rates: third, fifth, and eighth graders' pass rates on both components of the test (reading and math). The overall mean of these six pass rates for each district was used as the measure of the academic competency of a district's students. Concerning dropout rate, each district must submit an annual report to the Pennsylvania Department of Education indicating the number of students in grades seven through twelve who dropped out. Dropouts were distinguished from students who simply moved to another school district. For each district, DROP is a percentage based upon the number of students who dropped out in an academic year divided by the number of total students in the district.

Control Variables. The socio-economic status of students, SES, is the mean of annual personal income of households within a school district (in 1988 dollars) divided by the number of students in the district. INSTEXP is the district's annual instructional expenditures (in 1988 dollars), divided by the number of students in the district. The adequacy of a district's physical facilities, FACIL, is a three-item survey measure of teacher perceptions of the adequacy of physical facilities (such as school building and classroom).

ER measures. STRIKE is based upon Pennsylvania Department of Education records of teacher strike days. These data were used to calculate the sum of days that a district's teachers were on strike during the eight years prior to collection of school district performance data. Eight years prior was chosen because eighth-grade students taking the final administration of the standardized test had been attending the district's schools for eight years. INVOLVE is a six-item survey measure of teacher involvement in decision making (such as formal participation, informal participation, and freedom to express dissenting views). JOBSAT is a six-item survey measure of satisfaction (such as with personal fulfillment from job, with pay, and with opportunities for career advancement). TURNIN is a three-item survey measure of intentions to find employment in a field other than public education. EVALAD is a three-item survey measure of the adequacy the performance evaluation program. PROFDEV is a two-item survey measure of the quality of in-service professional development programs. The Appendix contains all survey items and response scales.

Results

Descriptive statistics, presented in Tables 2 and 3, were computed for all variables. For the teacher survey scales, coefficient alphas were computed to examine the internal consistency of the scales. Intraclass correlations were computed to check the homogeneity of within-district teacher survey responses. Two intraclass correlations were calculated: ICC(1) and ICC(2), which address different properties of aggregate (within-district) scores (James 1982). ICC(1) indicates the reliability of individual survey respondents within a given school district; it compares the between-district sum of squares to the total sum of squares from a one-way analysis of variance, where the school district is specified as the independent categorical variable. ICC(2) is a measure of the reliability of mean scores within a given school district; it is the correlation between mean scores of two samples of teacher survey respondents drawn from a single school district.

Table 2 contains descriptive statistics, coefficient alphas, and intraclass correlations for variables used in tests of the ER model with TEST as the measure of district performance. Table 3 contains the same information for variables used in tests with DROP as the measure of district performance. Coefficient alphas are all above the rule-of-thumb value of .70 (Nunnally and Bernstein 1994). Historically, ICC(1) values have ranged from 0 to .5 with a median of .12; ICC(2) values should be .6 or higher (Ostroff and Schmitt 1993). Tables 2 and 3 show that the intraclass correlations are within the acceptable range, although ICC(1) values are somewhat low for TURNIN. Overall, the ICC(1) and ICC(2) values indicate acceptable levels of within-district homogeneity. Within-district means of teacher survey data were used in all tests of the ER model.

Tests of the ER Model

Zero-order correlations are reported in Table 4. Consistent with the ER model, there are significant positive correlations between TEST and INVOLVE and between TEST and JOBSAT. TEST shows the expected significant negative correlations with STRIKE and TURNIN. TEST also is positively correlated with the

exploratory ER measures, EVALAD and PROFDEV. Consistent with the ER model, DROP shows significant positive correlations with both STRIKE and TURNIN. No other ER variables are significantly correlated with DROP. Overall, these correlations provide preliminary support for Hypotheses 1a, 1b, 2a, 3a, 4a, 4b, and 6a. Also, correlations between individual measures of ER quality in Table 4 support the unity of ER systems within school districts. That is, measures of productive ER (INVOLVE, JOBSAT, EVALAD, and PROFDEV) are positively correlated with each other. Measures of unproductive ER (STRIKE and TURNIN) are positively correlated with each other as well. Yet, measures of productive ER are negatively correlated with measures of unproductive ER.

The primary tests of Hypotheses 1 through 6 were conducted in a series of regression analyses in which OLS regression was used. In predicting the two school district performance indicators, TEST and DROP, hierarchical OLS regression was carried out using two sets of predictors: (1) the control variables in Step 1; and (2) the ER variables in Step 2. A significant R^2 at Step 2 indicates that the ER variables contributed to school district performance after the effects of the control variables are accounted for.

Table 2

Descriptive Statistics, Coefficient Alphas, and Intraclass Correlations for Variables Used in Tests of the ER Model with TEST as the Performance Measure

Variable	Mean	SD	Minimum	Maximum	α	ICC (1)	ICC (2)
TEST (percent pass)	85.74	6.93	52.17	97.22			
SES ($/student)	70,111	47,705	23,564	506,221			
INSTEXP ($/student)	3,459	694	2,404	7,231			
FACIL	4.41	.51	2.54	5.48	.74	.15	.91
STRIKE	6.23	11.57	0	55			
INVOLVE	3.62	.33	2.56	4.41	.81	.10	.86
JOBSAT	3.97	.34	2.69	4.73	.77	.12	.89
TURNIN	2.13	.30	1.50	3.21	.89	.03	.63
EVALAD	4.37	.34	3.26	5.10	.75	.09	.85
PROFDEV	3.10	.42	2.02	4.27	.78	.15	.91

N = 180 school districts.

Table 3

Descriptive Statistics, Coefficient Alphas, and Intraclass Correlations for Variables Used in Tests of the ER Model with DROP as the Performance Measure

Variable	Mean	SD	Minimum	Maximum	α	ICC (1)	ICC (2)
DROP (percent)	2.00	1.22	0.0	9.49			
SES ($/student)	70,111	47,705	23,564	506,221			
INSTEXP ($/student)	3,459	694	2,404	7,231			
FACIL	4.23	.60	2.11	5.65	.74	.19	.91
STRIKE	6.23	11.57	0	55			
INVOLVE	3.59	.39	2.28	4.53	.82	.11	.85
JOBSAT	3.78	.35	2.53	4.62	.77	.12	.86
TURNIN	2.45	.40	1.46	3.80	.90	.04	.64
EVALAD	4.23	.40	2.73	5.07	.77	.10	.83
PROFDEV	2.97	.42	1.94	4.17	.75	.13	.87

N = 180 school districts

Table 4
Correlations

		1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*
1	TEST	—	—	.43*	.24*	.20*	-.16*	.38*	.42*	-.33*	.14*	.19*
2	DROP	—	—	—	—	—	—	—	—	—	—	—
3	SES	—	-.19*	—	.69*	.08	-.09	.14*	.24*	-.17*	.08	.21*
4	INSTEXP	—	-.07	.69*	—	-.03	.01	-.04	.21*	-.22*	.00	.25*
5	FACIL	—	.00	.07	-.01	—	-.11	.33*	.37*	.00	-.07	-.01
6	STRIKE	—	.13*	-.09	.01	-.13*	—	-.29*	-.17*	.15*	-.15*	-.10
7	INVOLVE	—	.04	.00	-.10	.27*	-.09	—	.55*	-.38*	.55*	.42*
8	JOBSAT	—	-.06	.21*	.24*	.26*	-.08	.50*	—	-.62*	.34*	.37*
9	TURNIN	—	.15*	-.18*	-.20*	-.18*	.07	-.30*	-.64*	—	-.28*	-.28*
10	EVALAD	—	.01	-.04	-.08	.20*	-.06	.61*	.39*	-.32*	—	.30*
11	PROFDEV	—	.02	.10	.08	.14*	-.01	.56*	.41*	-.24*	.40*	—

Note: Correlations among variables used in tests of the ER model with TEST as the performance measure are above the diagonal; correlations among variables used in tests of the ER model with DROP as the performance measure are below the diagonal.

* $p < .05$, two-tailed

Table 5 presents a hierarchical regression in which TEST was regressed on the controls and ER variables. With respect to the ER variables in Step 2, Table 5 shows a significant increment in the prediction of TEST with the addition of the ER measures. With ER variables, R^2 increases from .22 to .33. This .11 increment in R^2 is significant ($F [4, 172] = 7.06$, $p < .001$), providing support for the central idea in the ER model—namely, that the quality of ER impacts school district performance. Concerning the individual ER variables, the results are largely supportive. INVOLVE and JOBSAT show significantly positive regression coefficients with TEST. Hypotheses 2a and 3a are therefore supported—districts with high test pass rates are districts characterized by active teacher involvement in decision making and high teacher job satisfaction. STRIKE and TURNIN show the hypothesized negative coefficients with TEST, yet they fail to reach significance. Hypotheses 1a and 4a are not supported.

Regarding the other indicator of district performance, DROP, hierarchical regressions analogous to those for TEST were carried out. Table 5 shows the results. Introduction of the ER variables in Step 2 accounts for an increment in the variance in DROP, from .04 to .08. Beyond the controls, this .04 increment in R^2 approaches, but fails to reach, marginal significance ($F [4, 172] = 1.87$, $p < .1178$). TURNIN shows the expected significant positive coefficient with DROP. This is support for Hypothesis 4b—districts with high dropout rates are districts whose teachers are looking for employment elsewhere. The coefficient for STRIKE reaches the $p < .0634$ level of significance. This provides marginal support for Hypothesis 1b. Regression coefficients for INVOLVE and JOBSAT are not significant. Hypotheses 2b and 3b are not supported.

Table 5's results indicate that individual ER variables have practical significance for educational performance. Assuming all variables in the regressions have mean values, a one standard deviation increase in INVOLVE and JOBSAT would raise a district's test pass rate by 1.17 and 1.27 percentage points, respectively. A one standard deviation decrease in STRIKE and TURNIN would lower the dropout rate by .139 and .206 percentage points, respectively.

Hierarchical regressions with the same controls were used to examine the effects of the two exploratory measures of ER quality, EVALAD and PROFDEV. Neither variable is significantly associated with TEST or DROP. Hypotheses 5a, 5b, 6a, and 6b are therefore not supported. To conserve space these results are not presented.

So far, results in Table 5 show that STRIKE, INVOLVE, JOBSAT, and TURNIN are measures of ER associated with district performance (albeit with varying strength). Of these ER measures, INVOLVE, JOBSAT, and TURNIN describe ER quality as reflected in within-district aggregate measures of the psychological states of teachers. That these measures are associated with district performance is an interesting fact, yet it leaves unanswered a practical question: How do school district administrators improve these psychological states? One possibility is that administrators can improve the adequacy of teacher performance evaluation and professional development programs.

To explore this possibility, I conducted hierarchical regressions to test whether EVALAD and PROFDEV predicted INVOLVE, JOBSAT, and TURNIN. Table 6 presents the hierarchical regression using EVALAD and PROFDEV to predict INVOLVE. The introduction of EVALAD and PROFDEV in Step 2 yields a .31 increment in R^2 beyond the controls. This increment

Table 5

Hierarchical Regression Results with TEST and DROP

	Beta	*t*	R^2	*f*	ΔR^2
		Dependent Variable: TEST			
Step 1: Controls			.22	16.22**	
SES	.41	4.65**			
INSTEXP	-.10	-1.08			
FACIL	.01	0.16			
Step 2: Employment Relations Variables			.33	7.06**	.11**
STRIKE	-.02	-0.38			
INVOLVE	.17	2.15*			
JOBSAT	.18	2.04*			
TURNIN	-.09	-1.14			
		Dependent Variable: DROP			
Step 1: Controls			.04	2.74*	
SES	-.26	-2.56*			
INSTEXP	.15	1.45'			
FACIL	.04	0.51			
Step 2: Employment Relations Variables			.08	2.22*	.04
STRIKE	.11	1.53†			
INVOLVE	.09	1.06			
JOBSAT	.01	0.11			
TURNIN	.17	1.78*			

Beta = Standardized regression coefficient.

' $p < .10$. * $p < .05$. ** $p < .01$.

Significance levels of regression coefficients are one-tailed.

Table 6

Hierarchical Regression Results with INVOLVE, JOBSAT, and TURNIN

	Beta	*t*	R^2	*f*	ΔR^2
		Dependent Variable: INVOLVE			
Step 1: Controls			.14	9.87**	
SES	.25	2.60**			
INSTEXP	-.20	-2.12*			
FACIL	.31	4.34**			
Step 2: Employment Relations Variables			.45	28.73**	.31**
EVALAD	.40	6.54**			
PROFDEV	.31	5.08**			
		Dependent Variable: JOBSAT			
Step 1: Controls			.19	14.13**	
SES	.10	1.11*			
INSTEXP	.15	1.62†			
FACIL	.37	5.39**			
Step 2: Employment Relations Variables			.32	16.07**	.13**
EVALAD	.19	2.76**			
PROFDEV	.27	3.79**			
		Dependent Variable: TURNIN			
Step 1: Controls			.07	4.72**	
SES	-.05	-0.47			
INSTEXP	.17	-1.74*			
FACIL	-.17	-2.38**			
Step 2: Employment Relations Variables			.17	7.37**	.10**
EVALAD	-.27	-3.57**			
PROFDEV	-.10	-1.28			

Beta = Standardized regression coefficient.

† $p < .10$. * $p < .05$. ** $p < .01$.

Significance levels of regression coefficients are one-tailed.

is statistically significant ($F [2, 174] = 48.97$, $p < .001$). As individual predictors, both EVALAD and PROFDEV are significant at $p < .01$. Table 6 also presents the hierarchical regression using EVALAD and PROFDEV to predict JOBSAT. The introduction of EVALAD and PROFDEV in Step 2 yields a .13 increment in R^2 beyond the controls ($F [2, 174] = 15.49$, $p < .001$). Both EVALAD and PROFDEV are significant at $p < .01$. Finally, Table 6 shows EVALAD and PROFDEV as predictors of TURNIN. Again, they provide a significant R^2 increment of .10 beyond the controls ($F [2, 174] = 10.59$, $p < .001$). EVALAD shows the expected significant negative coefficient, although PROFDEV's negative coefficient fails to reach significance.

The results in Table 6 should be interpreted with caution because the magnitudes of the significant regression coefficients for EVALAD and PROFDEV may have been inflated due to common method variance—all variables are teacher self-report measures. Although recent evidence has shown that common method variance can inflate, deflate, or leave unchanged the strength of a relationship between two variables (Crampton and Wagner 1994), the present findings should be interpreted in light of Spector's (1987) adage that all self-report measures are correlated at .30. Nevertheless, results in Table 6 provide suggestive evidence that districts with effective teacher performance evaluation and professional development programs are districts that have active teacher involvement in decision making, high job satisfaction, and low teacher turnover intentions. These were the aggregate measures of teacher psychological states shown previously (in Table 5) to be associated with school district performance.

Discussion

The strengths of the present study include: (1) theoretical development of the ER model based upon the latest research literature on the effects of ER on organizational performance; (2) use of objective data on both cognitive and noncognitive student outcomes to measure school district performance; (3) use of psychometrically sound survey measures of teacher perceptions, attitudes, and behavioral intentions; and (4) use of important control variables (student SES, instructional expenditures, and adequacy of school facilities) in hypothesis tests regarding ER and school district performance.

Regression results indicate that the ER model as a whole is associated with student academic competence and student dropouts, even after accounting for the control variables. The model shows a sizable association with student academic achievement, an educational performance indicator that closely reflects intraschool conditions. Dropouts, on the other hand, may be more susceptible to extra-school factors such as the economic needs of families that require adolescents to quit school and get a job. Perhaps for this reason, the ER model shows only a weak association with dropout rates.

Concerning individual ER measures, the findings show that districts with a history of administrator-teacher conflict, as expressed in teacher strikes, tend to have relatively high dropout rates. On the surface, this finding is inconsistent with Zirkel's (1992) study, which shows that negative effects of teacher strikes on student outcomes are only "partial and short-lived at most" (p. 134). However, the present study examines the degree to which a school district has a history of teacher strikes over an eight-year period. Zirkel's paper, on the other hand, reviews studies that test whether a strike impacts students during the same year or in a subsequent year or two after the strike. Therefore, although Zirkel's findings show that teacher strikes have little, if any, short-term impact on educational outcomes, my results indicate that districts with a history of strikes have a higher number of dropouts. This may reflect a soured climate of relations between

administrators and teachers, thereby making teachers less willing to devote the extra time necessary to retain struggling students.

Teacher Involvement, Job Satisfaction, and Turnover Intentions: Why Are They Associated with School District Performance?

Teacher involvement, job satisfaction, and turnover intentions are each associated with school district performance. Teacher involvement in school governance shows a positive relationship with student academic competence. Teacher job satisfaction has a positive association with student academic competence. Teacher turnover intentions are positively associated with dropout rates. Why are these teacher psychological states associated with school district performance?

One possible explanation, which future research might investigate in detail, concerns the degree of on-the-job discretion that teachers have. Consider the three central features of the teaching task that require teachers to exert discretion (see Bailey 1992):

(1) **Task definition is variable.** Because teachers experience little or no control over inputs, such as student abilities or conditions arising in the classroom, teachers must exhibit discretion, judgment, and flexibility (Kerchner and Mitchell 1988) concerning how to structure teaching methods to best meet students' needs (Monk and King 1994).

(2) **Methods for problem resolution are uncertain.** Although some general principles for analyzing teaching problems exist, it is often difficult for teachers to know *a priori* which teaching methods will yield optimal results (Brophy 1986).

(3) **Job performance is monitored indirectly.** Their preparation and skill, embodied in certification, is designed to obligate teachers to monitor their own work in a way that is consistent with student learning (Shedd and Bacharach 1991).

In organizations where job performance requires relatively little discretion, such as assembly-line work, solutions to problems are more certain, and job performance can be monitored directly. Here, old-style management techniques based upon external control of employees, tight authority relations, and low employee job security may be adequate. By contrast, because teaching requires substantial discretion, the use of old-style management techniques on teachers will be suboptimal. That is, although teachers may give "a fair day's work for a fair day's pay," old-style management techniques will fail to exhaust potential teacher effort and initiative—there remains some effort that teachers exert at their own discretion (Bailey 1992). In the management of teachers, techniques emphasizing productive ER such as involvement in decision making, job satisfaction, and employment security are superior because they can tap what Bailey (1992) calls "discretionary effort," which results in exemplary teacher job performance (see Bailey 1992; Cohen 1993; Organ 1988 for similar arguments). Expressions of exemplary teacher job performance include, for example, organizational decision making of better quality, strong commitment to implementing decisions, heightened organizational loyalty, reduced absenteeism, and willingness to give extra attention to struggling students. Aggregated at the school district level, these teacher behaviors yield increased school district performance (Ostroff 1992; Ostroff and Schmitt 1993). At present, however, this overall line of reasoning has

yet to receive a full test. A possible path model to be tested by future researchers would be:

> Productive ER Practices → High Teacher Involvement, Job Satisfaction, and Low Turnover Intentions → Increased Discretionary Effort by Teachers → Enhanced Teacher Job Performance → Greater School District Performance.

Limitations

This study's tests of the ER model should be considered preliminary. First, the data are cross-sectional. The usual criticisms of such data apply—for example, the possible changing effects of variables over time. Second, the OLS results should be interpreted in light of the possibility that the effects of predictors in regression equations may have been inflated compared to alternative methods, such as two-stage least squares, that incorporate possible feedback paths from school district performance to ER (Levin 1970). Third, although the Pennsylvania data used to test the ER model include sizable districts, such as those with over 12,000 students, it should be noted that data were not available on the large school districts of Philadelphia and Pittsburgh. It should also be recognized, however, that the inclusion of Philadelphia and Pittsburgh could have confounded hypothesis tests because of the unique nature of ER in these large districts.

Managerial and Public Policy Implications

The present study has managerial implications for school administrators because it focuses attention on the degree to which administrators effectively manage ER within schools. The findings show that effective management of ER yields payoffs with respect to improved educational performance. Additionally, because of their effects on teacher involvement, job satisfaction, and turnover intentions, the adequacy of teacher performance evaluation and professional development programs appear to be possible managerial "levers" for administrators to use in their efforts to improve school district performance. In conjunction with reform programs focusing on curricula and school funding, training administrators to better manage ER could be a relatively inexpensive component of an overall scheme for improving public education.

The current public policy debate concerning education reform should be guided by empirical research on the determinants of educational performance. By investigating how educational performance is impacted by intra-organizational dynamics within public school districts, the present study demonstrates that the ER model can be a valuable tool for understanding determinants of educational performance that have not been studied in previous research. Such an understanding is critical for solid educational policy formulation, which, in turn, is necessary for improving the basic skills level of the American workforce.

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Appendix

Teacher Survey Items and Response Scales

A six-point response scale ranging from (1) ***Strongly disagree*** to (6) ***Strongly agree*** was used for all items except JOBSAT, which used a six-point response scale ranging from (1) ***Very dissatisfied*** to (6) ***Very satisfied.***

FACIL

1. My school building is attractive, clean, and well maintained.
2. My school building is structurally and otherwise physically safe.
3. My classroom is adequate for its purposes.

INVOLVE

1. The administration provides for the formal participation of the faculty in the decision-making process.
2. The administration provides for the informal participation of the faculty in the decision-making process.
3. I have adequate and timely information about the plans, policies, and changes that influence my work.
4. I am free to express dissenting views to the administration without fear of recrimination.
5. I am free to express dissenting views to citizens in the community without fear of recrimination.
6. I am involved in the curriculum decision-making process before changes are made.

JOBSAT

1. To what extent are you satisfied with student behavior in class(es)?
2. To what extent are you satisfied with the personal fulfillment you get from teaching?
3. All in all, how satisfied are you with your job?
4. To what extent are you satisfied with your pay?
5. To what extent are you satisfied with your benefits?
6. To what extent are you satisfied with your opportunity for career advancement?

TURNIN

1. I am considering employment in a field other than education.
2. During the past year, I have been actively seeking employment in a field other than public education.
3. I plan to leave public education employment within the next few years for reasons other than retirement.

EVALAD

1. My professional evaluation is used for instructional improvement.
2. The evaluations I receive are fairly administered.
3. Procedures used to evaluate teachers are clearly defined.

PROFDEV

1. The in-service training provided by my school district meets my professional needs.
2. Teacher input influences the development of the in-service training program.

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